

REMARKS

Claims 1, 9 and 15 are amended. Claims 1-17, as amended, remain in the application. No new matter is added by the amendments to the claims.

The Rejections:

In the Office Action dated December 28, 2007, the Examiner rejected Claims 1-3, 8 and 15-17 under 35 U.S.C. 102(b) as being anticipated by Hakala et al. U.S. Patent No. 6,367,587.

Referring to Claim 1, the Examiner stated that Hakala discloses an elevator drive machine including multiple electric motors and a traction sheave as claim (see all figures and respective portions of the specification). Hakala further depicts from figure 2, a pair of space apart end plates (frames 3, 3a) each retaining an associated bearing (22); a pair of electric motors having rotors (17 or 117, 18 or 118) and stators (19 or 119, 20 or 120); a shaft (199) (see figures 6 and 7) having opposed free ends, and being rotatably supported by bearings (22 or 122), each free end of the shaft being drivingly connected to an associated one of the motors. Furthermore, Hakala discloses a traction sheave (2 or 102) supported by the shaft for rotation by the motors (see figures 2 and 5-7).

As to Claim 15, the Examiner stated that Hakala addresses all the similar limitations of Claim 1 above, and in addition depicts on figures 6 and 7, a pair of electric motors each motor having a stator (119, 120) respectively mounted on one of the bearing end plates. Additionally depicts the shaft (199) as seen in figure 6 and 7 having opposed free ends being rotatably supported by bearings (122) and that the each free end extends beyond an associated one of the bearing and have mounted thereon a rotor (117 and 118) of an associated one of the motors.

Referring to Claim 16, the Examiner stated that each stator (19 or 119, 20 or 120) is mounted on an associated bearing end plate (22 or 122) by a cage housing as depicted in figures 2, 4 and 6.

As to Claim 2, the Examiner stated that Hakala depicts in figures 2, 3, 6 and 7, rotors (17 or 117, 18 or 118) arranged on the associated free end of the shaft (199) and a stator (19 or 119, 20 or 120) mounted on an associated bearing end plate by a cage housing.

Referring to Claims 3 and 17, the Examiner stated that Hakala discloses at least one brake disk (9) (see figures 2 and 4) attached to the traction sheave (2) and at least one disk brake (brake shoe 25) acting on at least one brake disk (see Col. 4, lines 20-22 and Col. 5, lines 60-63).

As to Claim 8, the Examiner stated that Hakala discloses a secondary sheave (47) attached to the machine frame by a support (46) (see figure 5).

The Examiner rejected Claims 4-7 and 9-14 under 35 U.S.C. 103(a) as being unpatentable over Hakala in view of Albrich et al. U.S. Patent No. 6,429,554.

Referring to Claims 4 and 9, the Examiner stated that Hakala addresses all the similar limitations of Claim 1 above, but does not explicitly describes having a drive unit with a plurality of frequency converters connected to the motors and operating in a master/slave mode. However, Albrich discloses a system in which an electric motor is being used in cableway drives or lift systems wherein a plurality of frequency converters are connected to the motor and are operating in a master/slave mode (see Claim 1). Additionally, Albrich discloses in figure 1, frequency converters (5a-5f). Since Hakala and Albrich are in the same field of endeavor regarding lift systems, the purpose disclosed by Albrich would have been recognized in the pertinent art of Hakala. According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a plurality of frequency converters connected to each motors and operating in a master/slave mode as taught by Albrich within the teaching of Hakala for the purpose/advantages that in the event of failure of one or more stator segments in the motor (i.e. winding short circuit or failures in the associated frequency converter) the electric motor can continue to run generally without additional measures, or in the worst case scenario, the other motor will continue to operate.

As to Claims 5, 10 and 13, the Examiner stated that Albrich depicts from figure 1, a control portion (6a) of the master frequency converter (5a) that would obviously specifies a total current distributed among the frequency converters (5b-5f), in which each of the slave frequency converters (5b-5f) would obviously include a current regulator for regulating a current based upon a reference current value and an actual current value as detected by a current detection device (9a).

Referring to Claims 6 and 11, the Examiner stated that Albrich depicts from figure 1, a bus system connecting frequency converters (5a-5f) for communicating at least one of reference-current, synchronization signals and identification signals from the main control device (II).

As to Claims 7 and 12, the Examiner stated that Albrich discloses a resolver line (15), representing an actual rotational speed of a motor shaft by a tachogenerator (not shown, but implied, see dotted line 15) coupled to the shaft and the control portion (6a), which generates a signal representing a reference rotational speed (see in addition figure 1 and Col. 3, lines 31-41). Moreover, Hakala et al. discloses having a tachometer (13) (see figure 1).

As to Claim 14, the Examiner stated that Hakala discloses a secondary sheave (47) attached to the machine frame by a support (46) (see figure 5).

The Response:

Applicant amended Claims 1, 9 and 15 to clarify that the shaft is rotatably supported by both of the bearings retained in the end-plates.

In regards to Applicant's prior remarks that Hakala "does not teach or suggest to describe having a shaft and a traction sheave supported by the shaft of the motors", the Examiner stated that Hakala clearly shows a pair of motors each having rotors (17 or 117, 18 or 118) and stators (19 or 119, 20 or 120), which rotate in a shaft 199 as seen in figures 2, 3, 6 and 7, and being supported by rotors (17 or 117, 18 or 118), which are part of the pair of motors.

Applicant respectfully requests that the Examiner explain how the rotors (17 or 117, 18 or 118) and the stators (19 or 119, 20 or 120) rotate in the shaft 199.

The Hakala auxiliary shaft 199 is only shown in Figs. 6 and 7 and not in Figs. 2 and 3 as stated by the Examiner. Figs. 2 and 3 show only a screw 16 and a bearing 40. There is no auxiliary shaft shown in Figs 2 and 3.

Applicant does not understand the Examiner's statement that the rotors 117, 118 and the stators 119, 120 rotate in the shaft 199. The stators 119, 120 are fixed and do not rotate. The rotor 117 is rotatably mounted in one of the bearings 122 and is spaced axially from the shaft 199 without a direct connection between these parts. The rotor 118 is rotatably mounted in the other one of the bearings 122 and is connected to the shaft 199 through a collar 197. However, the

shaft 199 appears to be solid and it is clear that none of the rotors 117, 118 and the stators 119, 120 rotates in the shaft 199. Furthermore, Applicant doesn't understand how the Hakala stators 119, 120 are being supported by the rotors 117, 118 as stated by the Examiner. The rotors 117, 118 are supported on the frame blocks 103, 103a by the bearings 122 (Col. 7, Lines 10-13).

With regards to the new Claims 15-17, the Examiner recognized that Hakala depicts the rotors (17 or 117, 18 or 118) are mounted on the bearings (22 or 122). The Examiner concluded that, however, Hakala clearly shows the bearings (22 or 122) are supported on each free end of the shaft (199), which the free end extends beyond an associated bearing (see figure 6 and 7).

That is not what Hakala shows or describes. As explained above, there is no shaft 199 in the embodiment shown in Figs. 2 and 3 that include the bearings 22. The rotors 117, 118 are supported on the frame blocks 103, 103a by the bearings 122 (Col. 7, Lines 10-13). The shaft 199 is supported by the bearing 140 mounted on the frame block 103 and the mounting collar 197 attached to the rotor 118. Clearly the bearings 122 are not supported on each free end of the shaft 199 as stated by the Examiner.

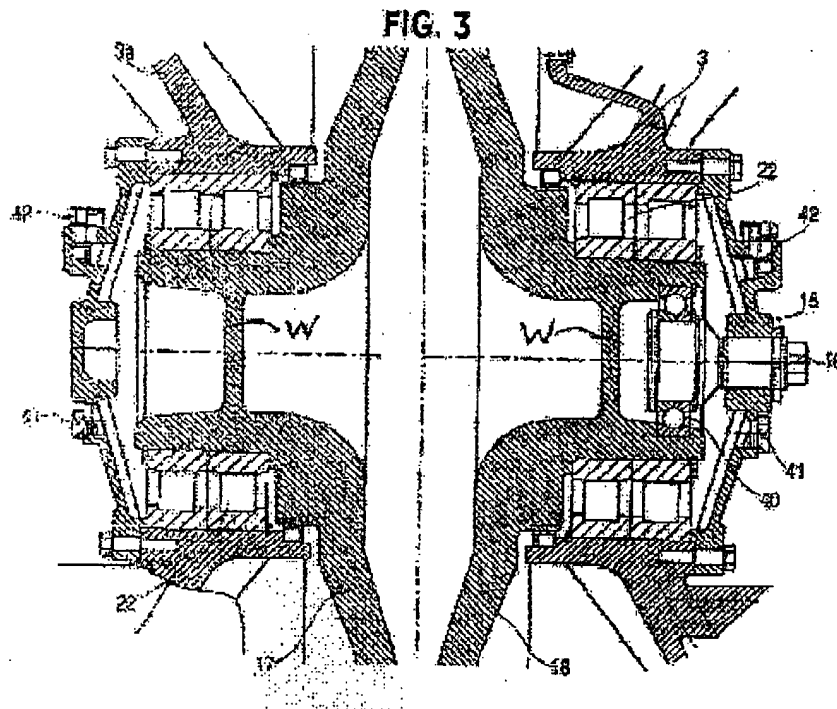
The Examiner stated that Applicant's argument, which Hakala describes in Col. 3, Lines 3-10 that the drive machine does not have a drive shaft, is not correct. According to the Examiner, Applicant has misconstrued the statement "...transmit the torque, power and forces directly from the machine to the traction sheave without a separate drive shaft." According to the Examiner, Hakala clearly shows two motors, each having a rotor and a stator, which rotate in a shaft 199 as clearly depicted from Figs. 6 and 7 and having a traction sheave 102 supported by the shaft for rotation by the motors. The Examiner further stated that Hakala states as best understood in Col. 3, Lines 3-10, that the transmission of the torque, power and forces directly from the machine to the traction sheave can be done with only one drive shaft (emphasis added) not two separate drive shaft.

As Applicant explained above, the shaft 199 appears to be solid and it is clear that none of the rotors 117, 118 and the stators 119, 120 rotates in the shaft 199. Furthermore, the Examiner has not explained how the torque, power and forces are transmitted directly from the machine to the traction sheave by the shaft 199. Clearly, the torque, power and forces are transmitted directly from the rotors 117, 118 to the attached traction sheave 102.

Regarding the Examiner's interpretation of the description at Col. 3, Lines 3-10, Applicant notes that Hakala states "without a separate drive shaft". If Hakala meant with only one shaft, the statement would have been "without separate drive shafts".

Applicant's amended Claims 1, 9 and 15 recite that the drive shaft with free ends drivingly connected to the associated motors is rotatably supported by both of the bearings retained in the end-plates. Even if the Hakala shaft 199 could be considered a drive shaft, which it is not, the shaft 199 is not rotatably supported by the bearings 122. The shaft 199 is not supported by the bearing 122 associated with the frame block 103a (Fig. 6) since the traction sheave 102 can be removed and the shaft 199 will function in the same manner supported by the bearing 140 mounted on the frame block 103 and the mounting collar 197 attached to rotor 118. With reference to Fig. 7, the shaft 199 is supported by the bearing 140 and the collar 197 only provides a coupling to the rotor 118 for driving the shaft 199 and the resolver 190 in rotation.

As shown in Figs. 2 and 3, the Hakala traction sheave 2 is mounted on the rotors 17 and 18 which rotors are attached together by fasteners. Each of the rotors 17 and 18 has an outwardly extending hollow center portion on which a pair of bearings 22 is mounted to support the rotors on corresponding frame blocks 3a and 3. The horizontal chain line shown in Fig. 3 simply depicts the axis of rotation of the rotors 17 and 18. There is no shaft drivingly connected to the motors as is evident from the vertical wall (designated W in Hakala Fig. 3 below) concentric with one of the bearings 22 and closing each of the hollow center portions of the rotors 17 and 18. The only connection between the rotors 17 and 18 is by fasteners that attach the rotors directly to the traction sheave 2 as shown in Fig. 2. The center lines in Fig. 3 are located in the hollow interior of the rotors 17 and 18. Similarly, the covers 186 shown in Fig. 6 of Hakala clearly indicate that there is no shaft drivingly connected to the two motors.



Thus, the Hakala drive machine does not include or suggest the following elements of Applicant's Claim 1:

a shaft having opposed free ends, said shaft being rotatably supported by both of said bearings, each of said free ends of said shaft being drivingly connected to an associated one of said motors (Hakala has no shaft); and

a traction sheave supported by said shaft for rotation by said motors (the Hakala traction sheave 2, 102 is supported by the rotors 17, 18 and 117, 118).

The above comments also apply to independent Claims 9 and 15.

Albrich does not provide the missing elements.

In view of the above arguments, Applicant believes that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.